



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,392	05/24/2001	Daigo Sasaki	088475-0118	1510

22428 7590 03/12/2004

FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

EDWARDS, PATRICK L

ART UNIT	PAPER NUMBER
----------	--------------

2621

DATE MAILED: 03/12/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/863,392

Applicant(s)

SASAKI, DAIGO

Examiner

Patrick L Edwards

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☒ Claim(s) 1,6,11,16,23,28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The disclosure contains several instances of grammatically incorrect and/or mis-worded sentences. The following listed examples are meant to illustrate errors in the specification, and are not meant as an exhaustive list.

a) paragraphs [0046] and [0065] are grammatically incorrect in that they appear to be missing the word “are” between the words “area” and “successively”.

b) In paragraph [0107], the sentence “The mixing operation of the mixer 12 is performed by pixel by pixel in whole the input image 1”, does not make any sense as currently read.

The applicant is required to correct all grammatical errors which exist in the specification.

Claim Objections

2. Claims 1, 6, 11, 16, 23 and 28 objected to because of the following informalities:

Part (b) of these claims is worded in a confusing manner which causes a possible misunderstanding in the reading of the claim. Specifically, the claim reads that the filtering operation is applied to the target pixel and the neighboring pixels. This is confusing in that the filtering appears to be applied to just the target pixel of a local area, not all of the pixels in the local area. In addition, the claim reads that this filtering operation is applied while the pixels in the local area are successively assigned to the target pixels. This is confusing in that it implies that the filtering operation and the operation of assigning a new target pixel are performed simultaneously. In addition, stating that the “pixels in the local area are successively assigned to the target pixel” seems like an awkward way of stating that all of the pixels in a local area of a given target pixel, will eventually serve as a target pixel which defines its own local area.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With regard to claims 1, 6, 11, 16, 23 and 28, the phrase “all the pixels in the local area are successively assigned to the target pixel” was not clearly explained in the specification. The phrase appears to be referring to the process of moving the local area across the image until every pixel serves as the target pixel. This process is touched upon in paragraph’s [0113]-[0116] of the specification, but is not described in sufficient detail. For instance, paragraph [0115] of the specification appears to indicate that the local area moves down from its initial spot, but doesn’t explain what happens after that. A clear explanation of how the target pixel (and consequently the local area) are changed as the image is filtered. In addition, it isn’t clear how the pixels in the local area which lie on the edge of the image (see Figure 3B) are ever defined as a target pixel. Paragraph [0116] states that ‘every pixel of the input image is defined as the target pixel’, but it is never explained what the local area would consist of in the event that the edge pixels are defined as the target pixel.

With regard to claims 6, 16 and 28, part (b) of these claims states that the filtered image has a jaggy different in phase from a jaggy in the input image. There are several instances where the specification recites this exact same phrasing in saying that a filtered image has jaggies different in phase

Art Unit: 2621

from the jaggies in the input image, but the specification never explains what the “phase” of a jaggy is and how a jaggy in a filtered image can be out of phase with a jaggy in an input image.

Claims 2-5, 7-10, 12-15, 17-22 and 24-27 are rejected because of their dependence on the above claims.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claims 1, 6, 11, 16, 23 and 28, the metes and bounds of part (b) of these claims are not clear in that it is unclear how the filtering operation is applied to the target pixel and the neighboring pixels.

In addition, it is unclear how this filtering operation is applied while pixels in the local area are assigned to the target pixel. Are these operations simultaneous?

Additionally, it is unclear how the pixels in the local area are assigned to the target pixel.

With regard to claims 6, 16 and 28, the metes and bounds of the phrase “the filtered image having a jaggy different in phase from a jaggy in the input image” are not clear in that it is unclear what exactly the phase of a jaggy is in this particular context.

Claims 2-5, 7-10, 12-15, 17-22 and 24-27 are rejected because of their dependence on the above claims.

Claim Rejections – 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2621

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 11 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi et al (USPN 6,041,145).

With regard to claim 11, which is representative of claim 1, Hayashi discloses a means for defining a local area in an input image which includes a target pixel and neighboring pixels surrounding the target pixel (col. 5 lines 45-49), and a filter for applying a filtering operation to the target pixel and the neighboring pixels in the local area while all the pixels in the local area are successively assigned to the target pixel in order to form a filtered image (col. 5 lines 43-50). The smoothing filter disclosed in Hayashi filters the target pixel in a local area. This filtering operation is done over all the pixels in the entire image (col. 16 lines 39-41). Hayashi further discloses an image mixer for mixing the filtered image and the input image together at a specific mixing ratio in order to form an output image (col. 7 lines 5-11).

With regard to claim 23, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in Hayashi is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi.

Claim Rejections – 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2621

10. Claims 6, 16, 22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (USPN 6,041,145) in view of Kitamura (USPN 4,703,363). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 16, which is representative of claim 6, Hayashi discloses a smoothing filter, but fails to expressly disclose that the smoothing filter provides filtered image which has a jaggy different in phase from a jaggy in the input image, and that the jaggies in the input image are suppressed by the filtering operation.

Kitamura, however, discloses a smoothing filter which suppresses jaggies in an image (Kitamura col. 2 lines 1-5). The smoothing filter of Kitamura produces an output image in which the jaggies of the input image are smoothed. Consequently we can say that this output image has jaggies different in phase from the jaggies in the input image. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's smoothing filter by using the smoothing filter to remove jaggies in an image as taught by Kitamura. Such a modification would have allowed for a system that applied a smoothing filter for the purpose of removing jaggies in an image (Kitamura col. 2 lines 1-5).

With regard to claim 22, Kitamura further recites a system for removing jaggies (Kitamura col. 2 lines 1-5) in an image which is displayed on a display apparatus (Kitamura col. 1 lines 19-21). As a result, Kitamura discloses a display controlling apparatus in that he teaches controlling the images which are displayed on the display apparatus.

With regard to claim 28, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi and Kitamura is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi and Kitamura.

Art Unit: 2621

11. Claims 2, 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claims 1, 11 and 23 above, and further in view of Kundu et al. (USPN 5,218,649). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 12, which is representative of claim 2, Hayashi discloses a filter, but fails to expressly disclose that the filter is a median filter. Kundu, however discloses a filter for removing jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41) by utilizing a median filtering operation in which the pixel having a median value of density values of all the pixels in the local area is extracted and used for forming the filtered image (Kundu col. 8 lines 1-5). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's filter by specifying that the filter is a median filter as taught by Kundu. Such a modification would have allowed for the use of a filter that can be used in order to remove jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41).

12. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Kitamura as applied to claims 6 and 16 above, and further in view of Kundu et al (USPN 5,218,649). The arguments as to the relevance of Hayashi and Kitamura as applied in paragraph 10 above are incorporated herein.

With regard to claim 17, which is representative of claim 7, the combination of Hayashi and Kitamura discloses a filter, but fails to expressly disclose that the filter is a median filter. Kundu, however discloses a filter for removing jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41) by utilizing a median filtering operation in which the pixel having a median value of density values of all the pixels in the local area is extracted and used for forming the filtered image (Kundu col. 8 lines 1-5). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi and Kitamura's filter by specifying that the filter is a median filter as taught by Kundu. Such a

Art Unit: 2621

modification would have allowed for the use of a filter that can be used in order to remove jaggies (or staircasing) from an image (Kundu col. 3 lines 40-41).

13. Claims 4, 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claims 1, 11 and 23 above, and further in view of Cliquet (USPN 6,674,903). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 14, which is representative of claim 4, Hayashi fails to expressly disclose an interpolation processor for enlarging an original image at a specific enlarging ratio through interpolation to form the input image. Cliquet, however, discloses removing jaggies (or staircasing) from an image after it has been electronically enlarged (Cliquet col. 4 lines 22-24). Electronic images are enlarged by adding image (or pixel) information to an original image in order to form an enlarged image. These pixels are inherently added to the image by some form of interpolation processing. As a result, an interpolation processor is inherently disclosed in the teachings of Cliquet. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's image processing system by including an interpolation processor as taught by Cliquet. Such a modification would have allowed for a system that could remove the jaggies from an image after it had been enlarged (Cliquet col. 4 lines 22-24).

With regard to claim 26, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi and Cliquet is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi and Cliquet.

14. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Kitamura as applied to claims 6 and 16 above, and further in view of Cliquet (USPN

Art Unit: 2621

6,674,903). The arguments as to the relevance of Hayashi and Kitamura as applied in paragraph 10 above are incorporated herein.

With regard to claim 19, which is representative of claim 9, the combination of Hayashi and Kitamura fails to expressly disclose an interpolation processor for enlarging an original image at a specific enlarging ratio through interpolation to form the input image. Cliquet, however, discloses removing jaggies (or staircasing) from an image after it has been electronically enlarged (Cliquet col. 4 lines 22-24). Electronic images are enlarged by adding image (or pixel) information to an original image in order to form an enlarged image. These pixels are inherently added to the image by some form of interpolation processing. As a result, an interpolation processor is inherently disclosed in the teachings of Cliquet. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's image processing system by including an interpolation processor as taught by Cliquet. Such a modification would have allowed for a system that could remove the jaggies from an image after it had been enlarged (Cliquet col. 4 lines 22-24).

15. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claim 11 above, and further in view of Kitamura (USPN 4,703,363). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

Hayashi discloses a system for controlling an image, but fails to expressly disclose a displaying device for displaying the image. Kitamura, however, recites a system for removing jaggies (Kitamura col. 2 lines 1-5) in an image which is displayed on a display apparatus (Kitamura col. 1 lines 19-21). As a result, Kitamura discloses a display controlling apparatus in that he teaches controlling the images which are displayed on the display apparatus. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Hayashi's image processing system to include a display for displaying

Art Unit: 2621

the processed image as taught by Kitamura. Such a modification would have allowed for a system in which the processed images could be displayed on a display apparatus (Kitamura col. 1 lines 18-21)

16. Claims 3, 13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claims 1, 11 and 23 above, and further in view of Kishimoto (USPN 6,339,479). The arguments as to the relevance of Hayashi as applied in paragraph 8 above are incorporated herein.

With regard to claim 13, which is representative of claim 3, Hayashi discloses a filtering operation in which in an average value of density values in the local area is calculated, but fails to expressly disclose that one of the pixels having a nearest density value to the average value in the local area is extracted and used for forming the filtered image. Kishimoto, however, discloses a filter that uses a nearest neighbor method in which an average value of density values in a local area is calculated and one of the pixels having a nearest value to the average value in the local area is extracted and used as the output value (Kishimoto col. 1 lines 59-64). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the generic filter disclosed in Hayashi in order to specify that this filter is a type which outputs a nearest value to a local mean as taught by Kishimoto. Such a modification would have allowed for the utilization of a specific filtering method which is well known in the art.

With regard to claim 25, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi and Kishimoto is to function. Therefore, a computer-readable recording medium is inherent in the teachings of Hayashi and Kishimoto.

17. Claims 8 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Kitamura as applied to claims 6 and 16 above, and further in view of Kishimoto (USPN

Art Unit: 2621

6,339,479). The arguments as to the relevance of the combination of Hayashi and Kitamura as applied in paragraph 10 above are incorporated herein.

With regard to claim 18, which is representative of claim 8, the combination of Hayashi and Kitamura discloses a filtering operation in which an average value of density values in the local area is calculated, but fails to expressly disclose that one of the pixels having a nearest density value to the average value in the local area is extracted and used for forming the filtered image. Kishimoto, however, discloses a filter that uses a method in which an average value of density values in a local area is calculated and one of the pixels having a nearest value to the average value in the local area is extracted and used as the output value (Kishimoto col. 1 lines 59-64). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the generic filter disclosed in the combination of Hayashi and Kitamura in order to specify that this filter is a type which outputs a nearest value to a local mean as taught by Kishimoto. Such a modification would have allowed for the utilization of a specific filtering method which is well known in the art.

18. Claims 5, 15 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi and Cliquet as applied to claims 4, 14 and 26 above, and further in view of Woodson et al. (US PG PUB 2002/0122045). The arguments as to the relevance of the combination of Hayashi and Cliquet as applied in paragraph 13 above are incorporated herein.

With regard to claim 15, which is representative of claim 5, the combination of Hayashi and Cliquet discloses an interpolation processor for enlarging an original image to form an input image, but fails to expressly disclose that the mixing ratio is determined according to the enlarging ratio based on the interpolation performed in the interpolation processor. Woodson, however, discloses adjusting an alpha blending value on the basis of the interpolation value (Woodson paragraph [0010]). The alpha blending value disclosed in Woodson is analogous to the mixing ratio as recited in the claim. It would have been

Art Unit: 2621

obvious to one reasonably skilled in the art at the time of the invention to modify the combination of Hayashi and Cliquet in order to include that the mixing ratio is based on the enlarging ration as taught by Woodson. Such a modification would have allowed for a system which would perform proper mixing of a filtered and original image based on the amount the image was previously enlarged. This would have resulted in a system which applied to the proper amount of correction to edges and consequently would produce smooth edges in the processed image (Woodson paragraph [0010]).

With regard to claim 27, a computer-readable recording medium that stores a program which causes the computer to execute the steps of a method is essential if the image processing method disclosed in the combination of Hayashi, Cliquet and Woodson is to function. Therefore, a computer-readable recording medium is inherent in the teachings of the said combination.

19. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hayashi, Kitamura and Cliquet as applied to claims 9 and 19 above, and further in view of Woodson et al. (US PG PUB 2002/0122045). The arguments as to the relevance of said combination as applied in paragraph 14 above are incorporated herein.

With regard to claim 20, which is representative of claim 10, the combination of Hayashi, Kitamura and Cliquet discloses an interpolation processor for enlarging an original image to form an input image, but fails to expressly disclose that the mixing ratio is determined according to the enlarging ratio based on the interpolation performed in the interpolation processor. Woodson, however, discloses adjusting an alpha blending value on the basis of the interpolation value (Woodson paragraph [0010]). The alpha blending value disclosed in Woodson is analogous to the mixing ratio as recited in the claim. It would have been obvious to one reasonably skilled in the art at the time of the invention to modify the combination of Hayashi, Kitamura and Cliquet in order to include that the mixing ratio is based on the enlarging ration as taught by Woodson. Such a modification would have allowed for a system which

Art Unit: 2621

would perform proper mixing of a filtered and original image based on the amount the image was previously enlarged. This would have resulted in a system which applied to the proper amount of correction to edges and consequently would produce smooth edges in the processed image (Woodson paragraph [0010]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (703) 305-6301. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Lynn Edwards

Art Unit 2621

ple



LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600